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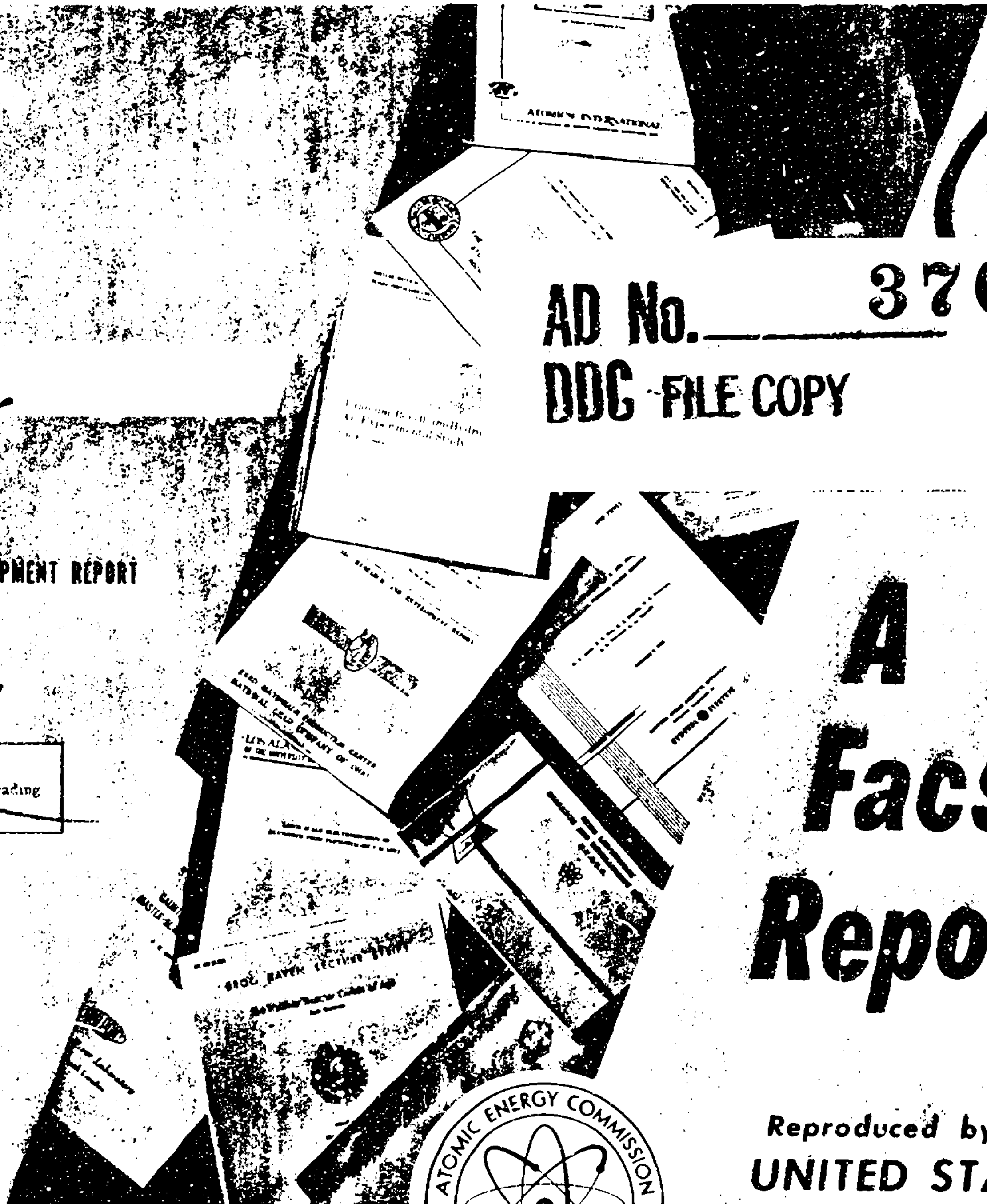

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BUREAU OF SHIPS GROUP
TECHNICAL INSPECTION REPORT

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U.S.S. BANNER (APA 60)

TEST ABLE

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USS BANNER (APA60)

(11) 1944

(12) 41 p.

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USS BANNER (APA60)

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U.S.S. BANNER (APA 60)

SHIP CHARACTERISTICS

Building Yard: Consolidated Steel Corp., Wilmington, California.

Commissioned: 18 September 1944.

HULL

Length Overall: [illegible] feet 0 inches.
Length on Waterline: 400 feet 0 inches.
Beam (extreme): 58 feet 0 inches.
Depth (molded to upper deck): 37 feet 0 inches.
Drafts at time of test: Fwd. [illegible] feet 3 inches.
Aft. 13 feet 4 inches.
Limiting displacement: 7,080 tons.
Displacement at time of test: 5,838 tons.

MAIN PROPULSION PLANT

Main Engines: Two sets of Westinghouse steam turbines, directly connected to Westinghouse main generators. Two main shaft motors.
Main Condensers: Two are installed in ship.
Boilers: Two Babcock and Wilcox boilers are installed in ship. 450 psi gauge - 750° F.
Propellers: Two are installed in ship.
Main Shafts: Two [illegible] installed in ship.
Ships Service Generators: Five Turbo Gen's are installed: Two - 250 KW. - 450 V. - A.C., One - 150 KW. - 450 V. A.C., and Two 100 KW. - 120/240 V. - D.C. units.

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By authority of JOINT CHIEFS OF STAFF [illegible]
By [illegible] Date MAY 1 6 1962

[redacted] BANNER (APA60)

Page 3 of 75 [illegible]

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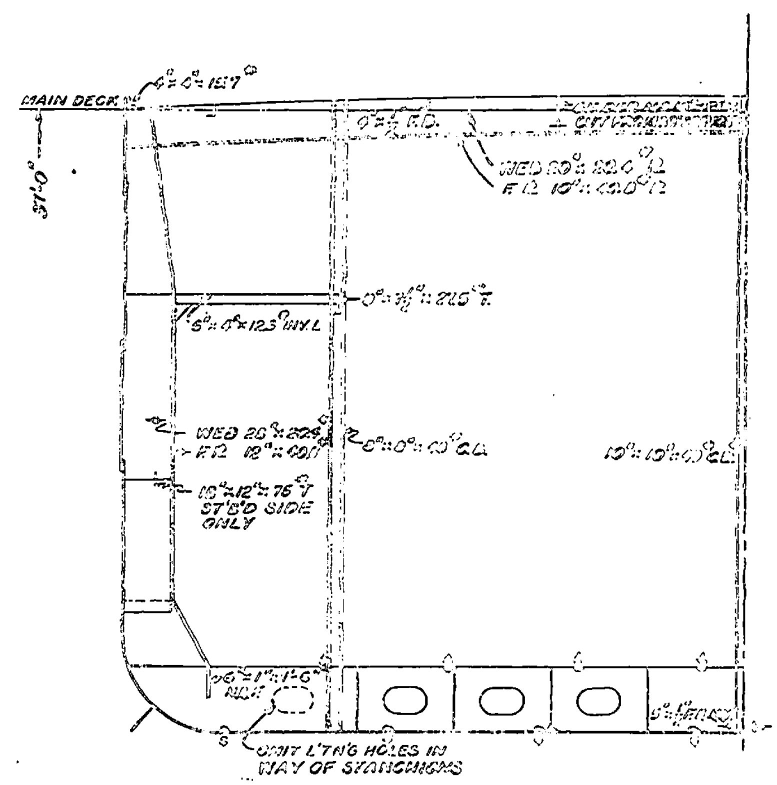

FRAME 55 LOOKING AFT

MIDSHIP SECTION

TEST A

U.S.S. BANNER (APA 60)

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TECHNICAL INSPECTION REPORT

OVERALL SUMMARY

1. Target Condition After Test.

(a) Drafts after test; list general areas of flooding, sources.

There was no flooding, hence no change in drafts as list.

(b) Structural damage.

HULL

The vessel sustained no damage to the main hull. Superstructure on the starboard side has light superficial damage.

MACHINERY

The outer casings of both stacks were moderately dented on both sides, aft.

ELECTRICAL

Not observed.

(c) Other damage.

HULL

Not observed.

MACHINERY

An electric drinking fountain in a passageway opening into the after cargo space was smashed by blast pressure entering via the cargo hatch opening.

SECRET

[illegible] were damaged by blast. A number of lamps were broken by shock. A small amount of cable was scorched by blast heat. The P.A.B. amplifier on the signal bridge was destroyed by fire.

[illegible] Produced and Effects Noted.

(a) Blast.

HULL

Heat radiation came from approximately 150 degrees relative. Heat charred and blistered paint on the entire starboard side and started a fire on the signal bridge. Signal halyards were burned. Speaker cabling was scorched.

MACHINERY

Not evidenced in machinery spaces.

ELECTRICAL

Exposed paint work was scorched by the blast heat. A small amount of electrical cable had the surface scorched by the heat.

(b) Fires and explosions.

HULL

A fire was started by heat radiation in the starboard flagbag and damaged adjacent equipment.

[illegible] were made to explosions.

MACHINERY

Not evidenced.

ELECTRICAL

A fire occurred in the starboard flagbag on the signal bridge. There were no explosions.

(c) Shock.

HULL

Shock came from approximately 160 degrees relative. About seventy light bulbs in topside structure, starboard were broken. Bulbs in shock mounts were undisturbed.

MACHINERY

Not evidenced.

ELECTRICAL

A number of lamps were broken by shock. Most of these were located above the main deck.

(d) Pressure.

HULL

The apparent direction of the pressure blast was from approximately 165 degrees relative.

MACHINERY

Blast pressure moderately dented the outer coamings of both stacks, and smashed an electric drinking fountain exposed to the direct effect of the pressure.

ELECTRICAL

There were no effects of pressure noted in electrical equipment.

(a) Effects peculiar to the atomic bomb.

HULL

None.

MACHINERY

None.

ELECTRICAL

The scorching by what was apparently radiant heat is the only effect noted as being peculiar to the atom bomb.

III. Results of Test on Target.

(b) Effect on machinery, electrical, and ship control.

HULL

None.

MACHINERY

The damage had no effect on the operation of the machinery installation. Ship control was not affected insofar as machinery was concerned.

ELECTRICAL

There was no effect on propulsion and ship control.

(b) Effect on gunnery and fire control.

HULL

None.

MACHINERY

No comment.

ELECTRICAL

There was no effect on gunnery and fire control.

(c) Effect on watertight integrity and stability.

HULL

The watertight integrity and stability of the vessel were not affected by the test.

MACHINERY

No comment.

ELECTRICAL

There was no effect on watertight integrity and stability.

(d) Effect on personnel and habitability.

HULL

Some injury to personnel would have probably resulted from the blast pressure or from the cargo hatch covers being blown into the holds. Habitability was negligibly affected.

MACHINERY

The test would have had no effect on personnel or habitability insofar as machinery is concerned.

ELECTRICAL

Electrical damage would have had no effect on the personnel nor on the habitability of the vessel.

(c) Effect on fighting efficiency.

HULL

The blast pressure did not impair either the hull strength or its seaworthiness. The superficial damage done to the superstructure did not affect the operability of equipment.

MACHINERY

None, insofar as machinery is concerned.

ELECTRICAL

Electrical damage would have had no effect on the fighting efficiency of the vessel.

IV. Summary of Observers' Impressions and Conclusions.

HULL

Damage is superficial. While some casualties might have been sustained by personnel stationed topside, the vessel would have been able to proceed on its mission.

MACHINERY

The BANNER was outside the effective range of the explosion in test A.

ELECTRICAL

The vessel suffered moderate blast in the weather areas and moderate shock to the superstructure areas. There was sufficient heat to ignite inflammable material.

V. Preliminary Recommendations.

HULL

No comment.

MACHINERY

None.

ELECTRICAL

Light weight salient equipment should have its exposed area reduced as much as possible, or should be strengthened. Combustible material should not be exposed topside. High shock lamps should be used throughout the vessel.

TECHNICAL INSPECTION REPORT

SECTION I - HULL

GENERAL SUMMARY OF HULL DAMAGE

I. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding sources.

There was no flooding, hence no change in drafts or list.

(b) Structural Damage.

The vessel sustained no damage to the main hull Superstructure on the starboard side has light superficial damage.

(c) Other damage.

Not observed.

II. Forces Evidenced and Effects Noted.

(a) Heat.

Heat radiation came from approximately 150 degrees relative. Heat charred and blistered paint on the entire starboard side and caused a fire on the signal bridge. Signal halyards were burned. Exposed cordage was scorched.

(b) Fires and Explosions.

A fire was started by heat radiation in the starboard flagbag and damaged adjacent equipment.

There were no explosions.

(c) Shock.

Shock came from approximately 150 degrees relative. About seventy light bulbs in topside structure, starboard were broken. Bulbs in shock mounts were undisturbed.

(d) Pressure.

The apparent direction of the pressure blast was from approximately 165 degrees relative.

(e) Effects peculiar to the Atom Bomb.

None.

III. Effects of Damage.

(a) Effect on machinery, electrical, and ship control.

None.

(b) Effect on gunnery and fire control.

None.

(c) Effect on watertight integrity and stability.

The watertight integrity and stability of the vessel were not affected by the Test.

(d) Effect on personnel and habitability.

Some injury to personnel would have probably resulted from the blast pressure or from the cargo hatch covers being blown into the holds. Habitability was negligibly affected.

(e) Effect on fighting efficiency.

The blast pressure did not impair either the hull strength or its seaworthiness. The superficial damage done to the superstructure did not Effect the operability of equipment.

IV. [illegible]

Damage [illegible] might have been sustained by personnel [illegible] would have been able to proceed on [illegible]

V. [illegible] general or [illegible] Inspection Group.

No comment.

VI. Instructions for loading the vessel [illegible] the following:

ITEM	[illegible]
Fuel oil	[illegible]
Diesel oil	[illegible]
Ammunition	100%
Potable and reserve feed water	Full load
Salt water ballast	1260 tons

Details of the actual quantities [illegible] aboard are included in Report 7, Stability Inspection Report, [illegible] by the ship's force in accordance with "Instructions to Target Ships for Tests and Observation by Ship's Force" issued [illegible] Director of Ships Material. This report is available for inspection in the Bureau of Ships Crossroads files.

DETAILED DESCRIPTION OF HULL DAMAGE

A. General Description of Hull Damage.

The vessel sustained light superficial damage to the starboard side of the superstructure. Paint is generally charred and blistered throughout the starboard side of the vessel. General views of the vessel are shown on pages 35 to 47, inclusive.

B. Superstructure.

Bulkheads (7.5 pound plate) facing to starboard and aft have light superficial damage consisting of one to two inch dishing. The forward bulwark plate at frame 52, starboard was bent slightly forward and broke the welds connecting the angle bar stiffeners to the superstructure deck. The after stack has a maximum dish of ten inches on the starboard after face and six inches on the port side. (Photo. 1733-6, Page 43). The forward stack has lighter damage. Weather doors in the general area of the superstructure are sprung yet operable. An exposed (7.5 pound plate) flat surface of a tub around a spotters position on the starboard signal bridge is dished one inch. Sheet metal flagbags and signal shack are seriously distorted and torn. (Photo. 1733-4, page 44). Gun tubs of 10 pound plate are undamaged.

A fire started by heat radiation destroyed the starboard flagbag, beachmasters portable announcing equipment, and numerous electrical cables and junction boxes on the starboard signal bridge. (Photo. 1733-1, page 45). Signal halyards were burned. Exposed manila line was scorched.

Paint scorching and blistering although wide spread, is only one coat deep. There was no blistering of deck paints. Black paint on canvas wrapping of ladder stanchion and rails at frame 57, starboard, upper deck, was almost completely scorched off while similar material nearby was unhurt.

C. Turrets, Guns, and Directors.

No damage.

D. Torpedo Mounts, Depth Charge Gear.

Not applicable.

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E. Weather Deck.

Damage sustained on the weather deck was principally confined to the pontoon hatch covers of the holds. Blast caused the hatch covers to deflect downwards sufficiently to slip past their supports. Some of the covers are bent. The [illegible] of scratch [illegible] installed in [illegible] at the weather deck are [illegible] on page 55.

F. Exterior Hull.

No damage.

G. Interior Compartments (above w.l.).

Upper deck hatch covers fell into both holds, and damaged covers at lower levels (photos 1826-11 and 1830-1, pages [illegible] and 47). In the after hold the blast reacted on the platform pontoon hatch covers, deflecting them until they dropped into the hold. Similar but less intense damage occurred in the forward hold. Many steel lockers were ripped or bulged in both cargo hold areas. Pipe stanchions supporting bunks also failed and [illegible] are [illegible]. (Photos 1814-10, 11 and 6, page 48, 49 and 50).

In the after hold, main deck, starboard, a sheet metal lightlock was blown apart.

H. Armor Decks and Miscellaneous Armor.

Not applicable.

I. Interior Compartments (below w.l.).

No damage.

J. Underwater hull.

No damage.

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[illegible]

E. Ventilation.

A large amount of greasy soot, similar to that found topside, was found in the galley. The soot apparently entered the compartment through the galley exhaust to No. [illegible] stack.

B. Ship Control.

No damage.

D. Fire Control.

No damage.

F. Ammunition Behavior.

No damage.

G. Ammunition Handling.

No damage.

H. Strength.

No damage.

I. Miscellaneous.

None.

SECTION II - MACHINERY

I. Target Condition After Test.

(a) Drafts after test [illegible]

(b) Structural damage.

The outer casings of both stacks were moderately dented on both sides, aft.

(c) Other damage.

An electric drinking fountain in a passageway opening into the after cargo space was smashed by blast pressure entering via the cargo hatch opening.

II. Forces Evidenced and Effects Noted.

(a) Heat.

Not evidenced in machinery spaces.

(b) Fires and explosions.

Not evidenced.

(c) Shock.

Not evidenced.

(d) Pressure.

Blast pressure moderately dented the outer casings of both stacks, and smashed an electric drinking fountain exposed to the direct effect of the pressure.

(b) Effects [illegible] the blast bomb.

None.

III. Effects of Damage.

(a) Effect on machinery and ship control.

The damage had no effect on the operation of the machinery installation. Ship control was not affected insofar as machinery was concerned.

(b) Effect on gunnery and fire control.

No comment.

(c) Effect on water-tight integrity and stability.

No comment.

(d) Effect on personnel and habitability.

The test would have had no effect on personnel or habitability insofar as machinery is concerned.

(e) Total effect on fighting efficiency.

None, insofar as machinery is concerned.

IV. General Summary.

The BANNER was outside the effective range of the explosion in Test A.

V. Preliminary Recommendation.

None.

DETAILED DESCRIPTION OF MACHINERY DAMAGE

A. General Description of Machinery Damage.

(a) Overall condition.

The outer casings of both chests were moderately dented. This does not impair operation. One electric drinking fountain, main deck, frame 135 amidships, was smashed by the blast pressure entering via the cargo hatch opening. Otherwise, the overall condition of the machinery was not changed by test A.

(b) Areas of major damage.

None.

(c) Primary cause of damage.

Not applicable.

(d) Effect of target test on overall operation of machinery plant.

The test had no effect on the overall operation of the machinery plant. Normal operation was resumed immediately after the test. All machinery has been operated since Test A and functioned normally.

B. BOILERS.

1. The boilers were not damaged by Test A. Both boilers have been steamed since the test, and performed normally.

2. Boiler #2 was left under hydrostatic pressure of 810 lbs/sq. in. when the ship was abandoned at 1145 June 30. Upon return of the crew at 1600 July 2 a pressure of 80 lbs/sq. in. remained.

3. Boiler #1 was left under steam pressure of 450 lbs/sq. in. when the ship was abandoned. No pressure remained when the crew returned.

The [illegible] of both stacks were moderately [illegible] on both [illegible]. This [illegible] not affect operation (see photos [illegible], 8, in pages 61, 62, and 53).

C. Blowers.

Undamaged. All blowers were operated under [illegible] after Test A.

D. Fuel Oil Equipment.

Undamaged. All equipment was inspected and operated under service conditions.

E. Boiler Feedwater Equipment.

Undamaged. All equipment was inspected and operated under service conditions.

F. Main Propulsion Machinery.

Undamaged. Turbo-generator No. 1 was operated [illegible] to both main motors after Test A. Visual inspection of [illegible] No. 2 revealed no damage.

G. Reduction Gears.

Not Applicable.

H. Shafting and Bearings.

Undamaged. All shafting and bearings were [illegible] with the shafts turning.

I. Lubrication System.

Undamaged. All equipment was inspected and [illegible] under service conditions after Test A.

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J. Condensers and Air Ejectors.

Undamaged. The condensers were operated under service conditions after Test A and maintained a vacuum of [illegible].

The injection and overboard valves on the [illegible] main and auxiliary condensers were left open during the test.

K. Pumps.

Undamaged. All pumps were operated satisfactorily at rated pressure after Test A.

L. Auxiliary Generators (Turbines and Gears).

Undamaged. All ship's service turbo generators (3) were satisfactorily operated under load after Test A.

M. Propellers.

Undamaged. The starboard propeller was inspected from the water surface. The port propeller was not visible. The propellers were checked while the main engines were in operation.

N. Distilling Plant.

Undamaged. The distilling plant has been in operation since test A with no change in the quantity or quality of water distilled.

O. Refrigeration Plant.

Undamaged. Two cold boxes were inoperable before Test A. Their condition was not changed by the test.

The remainder of the refrigerating plant has been in operation since Test A, and functions normally.

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9. Winches, Windlasses, Capstans.

Undamaged. All Walle Davis and winches, the capstan windlass, and the capstan have been operated since Test A, and function normally.

A. Steering Engine.

Undamaged. Both steering systems operated satisfactorily while throwing the rudder from full right to full left.

B. Air Lines, Ammunition Hoists, Etc.

Undamaged. The gasoline hoist and all four ammunition hoists have been operated since Test A. Operation was normal.

C. Ventilation (Machinery).

Undamaged. All blowers have been operated satisfactorily since Test A.

D. Compressed Air Plant.

Undamaged. The air compressor operated satisfactorily at raised pressure after Test A.

E. Diesels (Generators and Boats).

Undamaged. The diesel generator and the two diesel fire pumps were operated satisfactorily at raised load after Test A.

F. Piping Systems.

Undamaged. The piping was tested at raised pressure. No leaks were revealed.

W. Miscellaneous.

Laundry, galley, and machine shop equipment operated satisfactorily after Test A.

One electric drinking fountain, main deck, frame 135, amidships, was smashed by effect of blast which came down the cargo hatch opening.

TECHNICAL INSPECTION REPORT

SECTION III - ELECTRICAL

GENERAL SUMMARY OF ELECTRICAL DAMAGE

I. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding, sources.

Drafts and lists were not observed. There was no flooding.

(b) Structural damage.

Not observed.

(c) Other damage.

12" searchlights were damaged by blast. A number of lamps were broken by shock. A small amount of cable was scorched by blast heat. The P.A.B. amplifier on the signal bridge was destroyed by fire.

II. Forces Evidenced and Effects Noted.

(a) Heat.

Exposed paint work was scorched by the blast heat. A small amount of electrical cable had the surface scorched by the heat.

(b) Fires and explosions.

A fire occurred in the starboard flag bag on the signal bridge. There were no explosions.

(c) Shock.

A number of lamps were broken by shock. Most of these were located above the main deck.

(d) Pressure.

There were no effects of pressure noted in electrical equipment.

(e) Any effects apparently peculiar to the atom bomb.

The scorching by what was apparently radiant heat is the only effect noted as being peculiar to the atom bomb.

III. Effects of Damage.

(a) Effect on propulsion and ship control.

There was no effect on propulsion and ship control.

(b) Effect on gunnery and fire control.

There was no effect on gunnery and fire control.

(c) Effect on water-tight integrity and stability.

There was no effect on water-tight integrity stability.

(d) Effect on personnel and habitability.

Electrical damage would have had no effect on the personnel nor on the habitability of the vessel.

(e) Total effect on fighting efficiency.

Electrical damage would have had no effect on the fighting efficiency of the vessel.

IV. General Summary of Observers' Impressions and Conclusions.

The vessel suffered [illegible] blast in the weather areas and moderate shock to the superstructure areas. There was sufficient heat to ignite inflammable material.

V. Any Preliminary General or Specific Recommendations of the Inspecting Group.

Lightweight [illegible] equipment should have its exposed area reduced as much as possible, or should be strengthened. Combustible material should not be exposed topside. High shock [illegible] should be used throughout the vessel.

DETAILED DESCRIPTION OF ELECTRICAL DAMAGE

1. General Description of Electrical Damage.

(a) - Overall condition.

Good.

(b) Areas of major damage.

No major damage, superstructure and weather decks suffered slight damage.

(c) Primary causes of damage in each area of major damage.

Fire, blast, and shock.

(d) Effect of target test on overall operation of electric plant.

1. Ship's service generation plant - no effect.

2. Engine and boiler auxiliaries - no effect.

3. Electrical propulsion - no effect.

4. Communications - fire on the signal bridge destroyed one sound powered telephone handset and four (4) jackbox cables.

5. Fire control circuits - no effect.

6. Ventilation - no effect.

7. Lighting - about seventy (70) bulbs were broken on main deck and above.

(e) Types of equipment most affected.

1. Switchboards and control gear - no effect.

2. Rotating machinery - no effect.

3. Motor controllers - no effect.

4. Cables and supports - no effect, except for a very small amount of lightly scorched cable.

5. Wiring equipment - a small number of fittings burned on the signal bridge.

6. Lamps - about seventy (70) standard and rough service lamps were broken by shock.

B. Electric Propulsion Rotating Equipment.

Propulsion motors, generators and exciters showed no damage on inspection after the test. During dock trials, motors and alternators were operated in all combinations.

C. Electric Propulsion Control Equipment.

Inspection and a dock trial revealed no damage in the control equipment.

D. Generators - Ships Service.

Machines showed no damage on inspection and operated satisfactorily.

E. Generators - Emergency.

The Diesel emergency generator was used to supply power upon the return of the ship's force to the vessel after the test. No damage was apparent.

F. Switchboards, Distribution and Transfer Panels.

All switchboards were examined and energized. All circuits out from the boards were given insulation resistance tests. No damage or abnormal condition was found.

G. Wiring, Wiring Equipment and Wireways.

1. Rubber covered cables, when exposed in locations at which the surrounding paint work was blistered, showed evidence of surface charring although cable was still serviceable. Armor cable in the same location showed no heat damage.

2. Rubber watertight seals for pushbuttons showed the same charring as the rubber covered cable when exposed to the same heat.

3. At frame 110, main deck starboard, a sheet metal bulkhead collapsed, shearing two lighting cables, running from the overhead down the bulkhead. At the first bulkhead strap the break occurred. The damage was obviously not due to faulty electrical design.

H. Transformers.

Inspection and normal tests revealed no damage in any transformer. All transformers are located well away from all blast areas.

I. Submarine Propelling Batteries.

This item does not apply to the vessel.

J. Portable Batteries.

No portable battery was damaged in any way. No battery gave any indication of having shifted. The emergency Diesel starting battery functioned properly on return of the ship's force following the test.

K. Motors, Motor Generator Sets and Motor Controllers.

No damage was found to any motor, motor controller or motor generator. All units were operated and performed satisfactorily.

L. Lighting Equipment.

1. About seventy (70) standard and rough service lamps were broken throughout the ship. Most of the failures were on main deck and above, although a number occurred in the crew quarters on the second deck.

2. No lighting fixtures or wiring were damaged by the blast.

3. A Crouse-Hinds 500 W. Type AOB-34 Cat. No. 42740X, cargo flood light had front glass, hole and mirror holder, and one point of the three point mounting broken. The light was broadside to the blast.

M. Searchlights.

1. Two (2) 24" signal searchlights above the signal bridge, port and starboard on the forward stack, were undamaged. These lights were of the latest welded steel construction.

2. Two (2) 12" signal searchlights were mounted on the wings of the signal bridge. Both lights were well exposed to the blast. The starboard light had the lamp broken. The port light was mounted on the hand rail which collapsed, allowing the light to fall against the adjacent blast gauge tower. The reflector, front door glass, lamp and lamp base were broken; and a shutter handle jammed so as to be inoperable. The damage is not a fault of lamp design but of mounting.

Degaussing [illegible].

No damage was found in the degaussing system.

O. Gyro Compass [illegible]

No damage was found in any gyro compass [illegible]. [illegible] master gyro operated proper[illegible] and all repeaters [illegible].

P. Sound Powered Telephones.

1. Two (2) headsets [illegible] stowage [illegible] on the [illegible] at frame [illegible] behind the bulwark on bridge, were tested and [illegible] [illegible].

2. One (1) sound powered handset in watertight [illegible] box, and [illegible] pressed steel jack boxes on signal bridge [illegible] damaged [illegible] fire in the flag bag.

Q. Ship's Service Telephones.

The [illegible] telephones are the only [illegible] in the vessel.

R. [illegible] Systems.

1. The MC system [illegible] damage and was operable.

2. A [illegible] set erected on the signal bridge, and the [illegible] destroyed by the fire in the flag bag. The [illegible] was hurled against the forward bulwark by the blast, [illegible] indicated. The [illegible] appeared to be [illegible] be tested. The [illegible] of the [illegible] is too light for the use.

3. A [illegible] portable [illegible] set exposed on the [illegible] of the navigation bridge showed no apparent damage. The [illegible] not be tested.

S. Telegraphs.

No damage was found in any telegraph system.

T. Indicating System.

Only one (1) indicating system was found damaged. The "Edwards" fire alarm annunciator, Dwg. 6927. Five (5) [illegible] 12 neon indicator lights projecting through holes in the front panel were broken. It is believed that the breakage was caused by the dislodging of a jury-rigged metal shield, installed to prevent light from showing during darkened ship operations. This shield was not a part of the original design. It was noted that the holes in the panel itself were small and that any misalignment of bulbs would result in contact with the panel and danger from breakage due to vibration or shock. The panel was mounted on the forward port wheel house bulkhead.

U. I.C. and A.C.O. Switchboards.

The combined I.C. and A.C.O. switchboard was inspected. No damage was found and the board operated satisfactorily.

V. F.C. Switchboards.

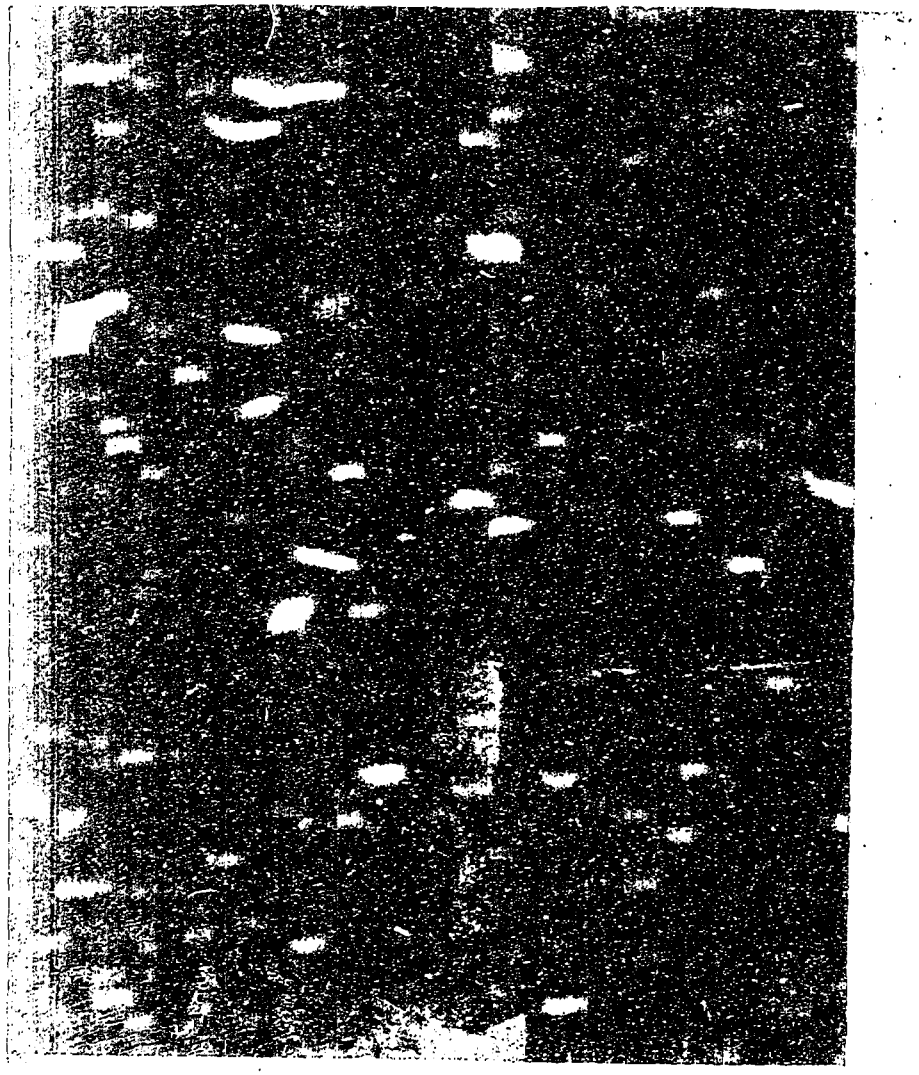
This Item does not apply to the vessel.

SECTION IV

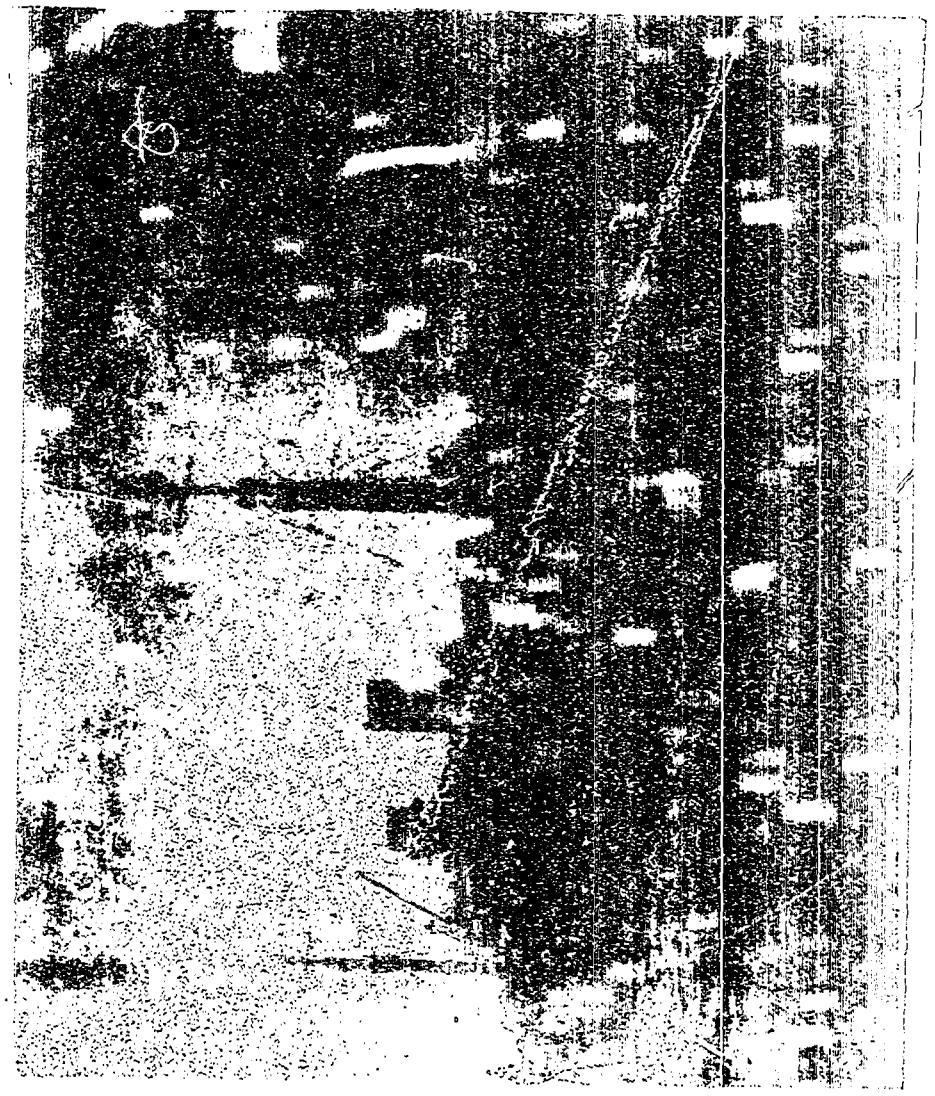
PHOTOGRAPHS

TEST ABLE

BA-CR-196-159-36. View from off port bow before Test A.

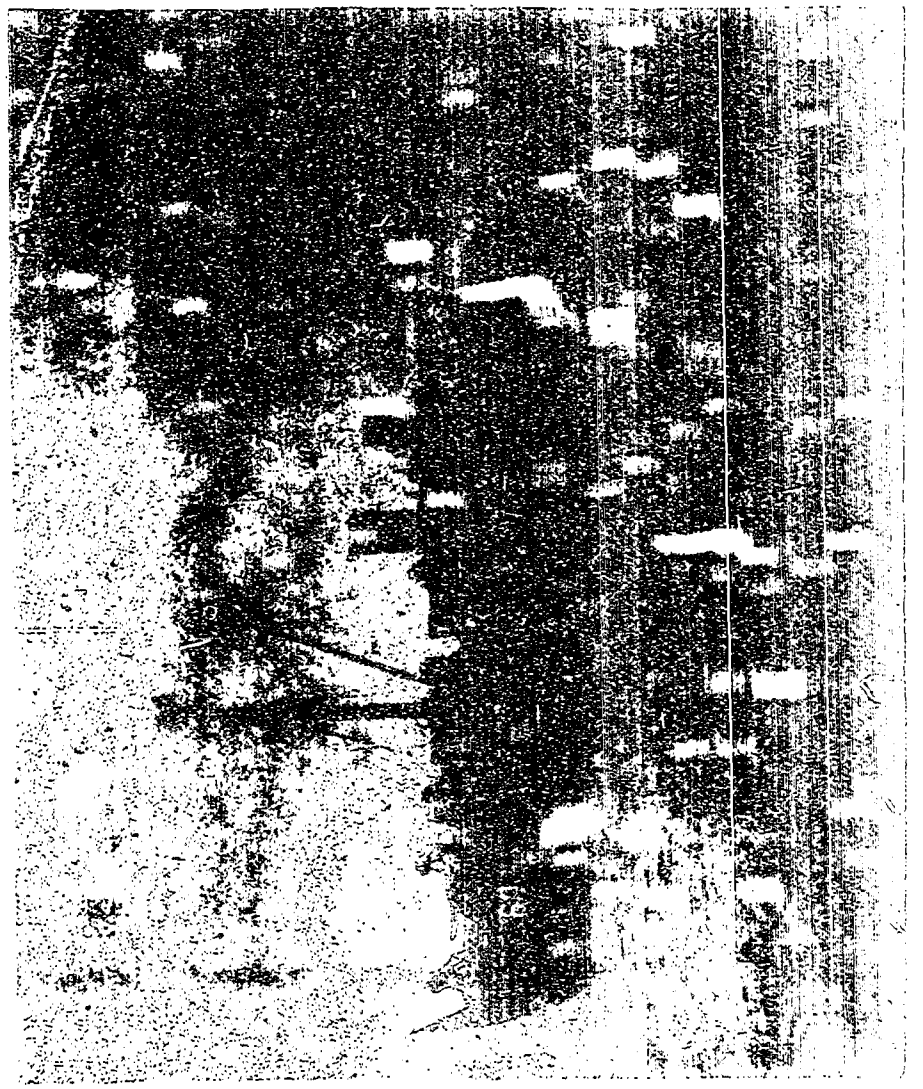


AA-CR-237-37-34. View from off port beam after Test A.

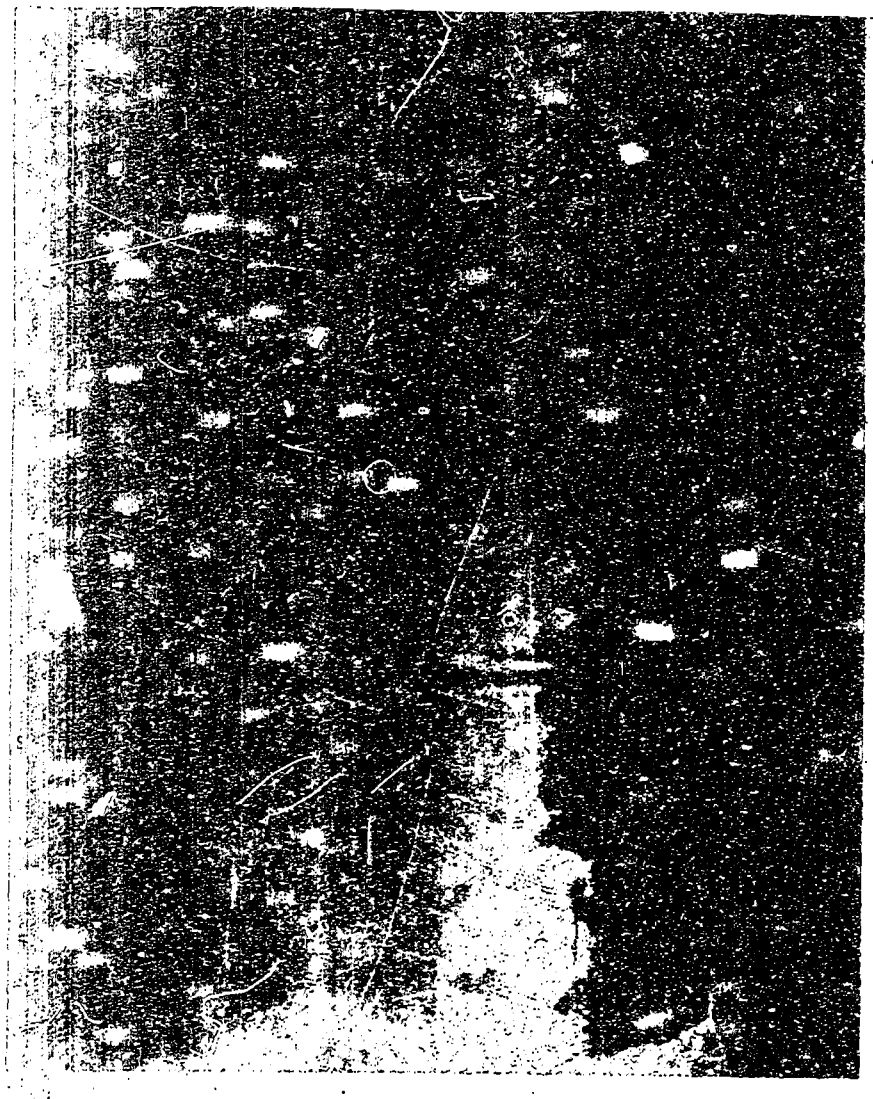


BA-CR-196-159-34. View from off port quarter before Test A.

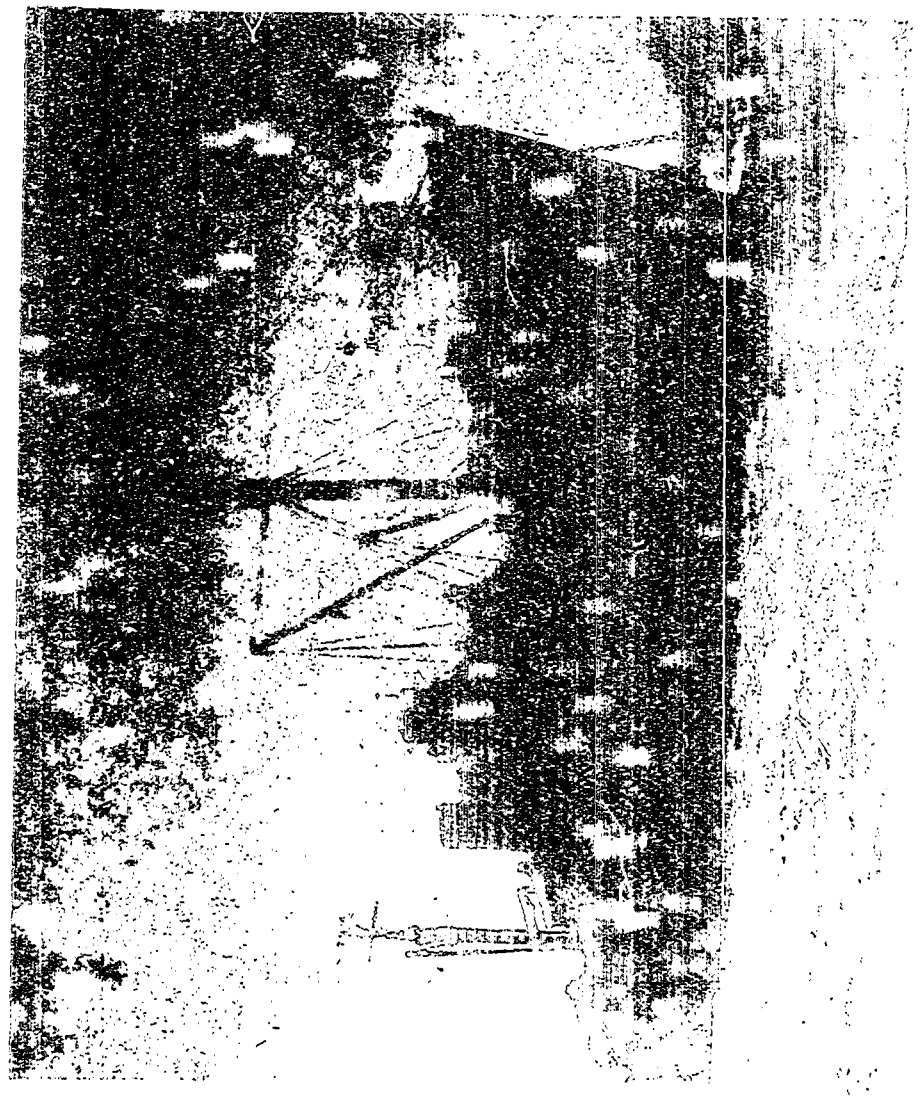
BA-CR-227-87-37. View from off port quarter after Test A.



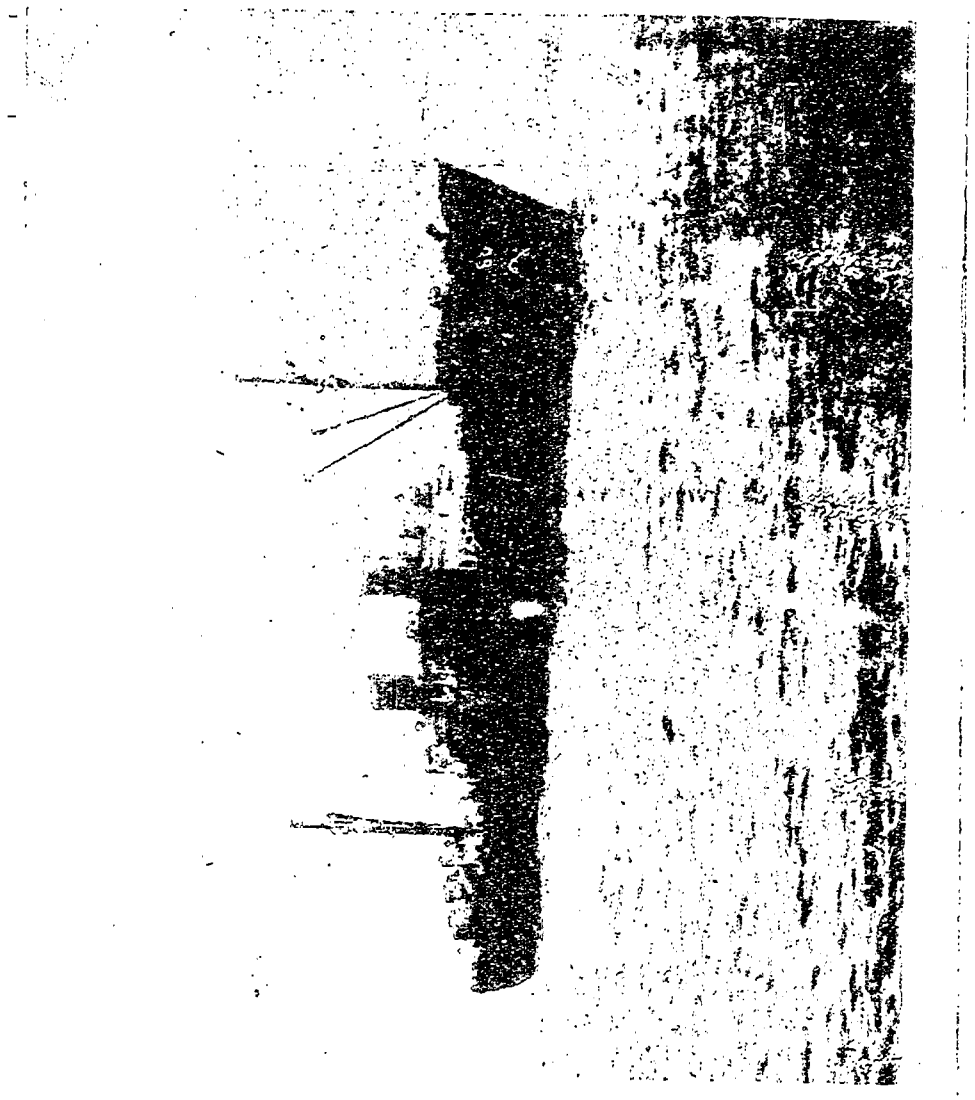
BA-CR-193-159-40. View from off starboard quarter before Test A.



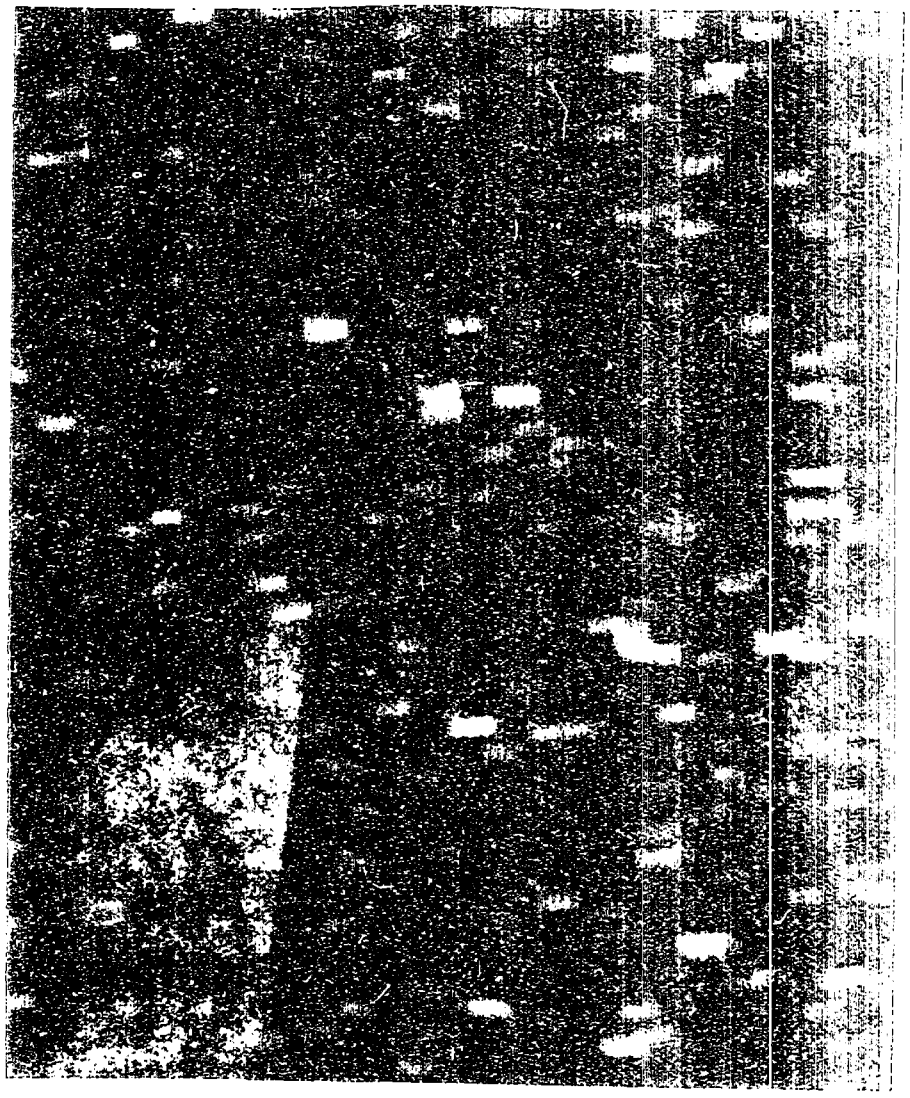
BA-CR-227-37-01. View from off starboard quarter after Test A.



BA-CR-193-159-38. View from off starboard bow before Test A.

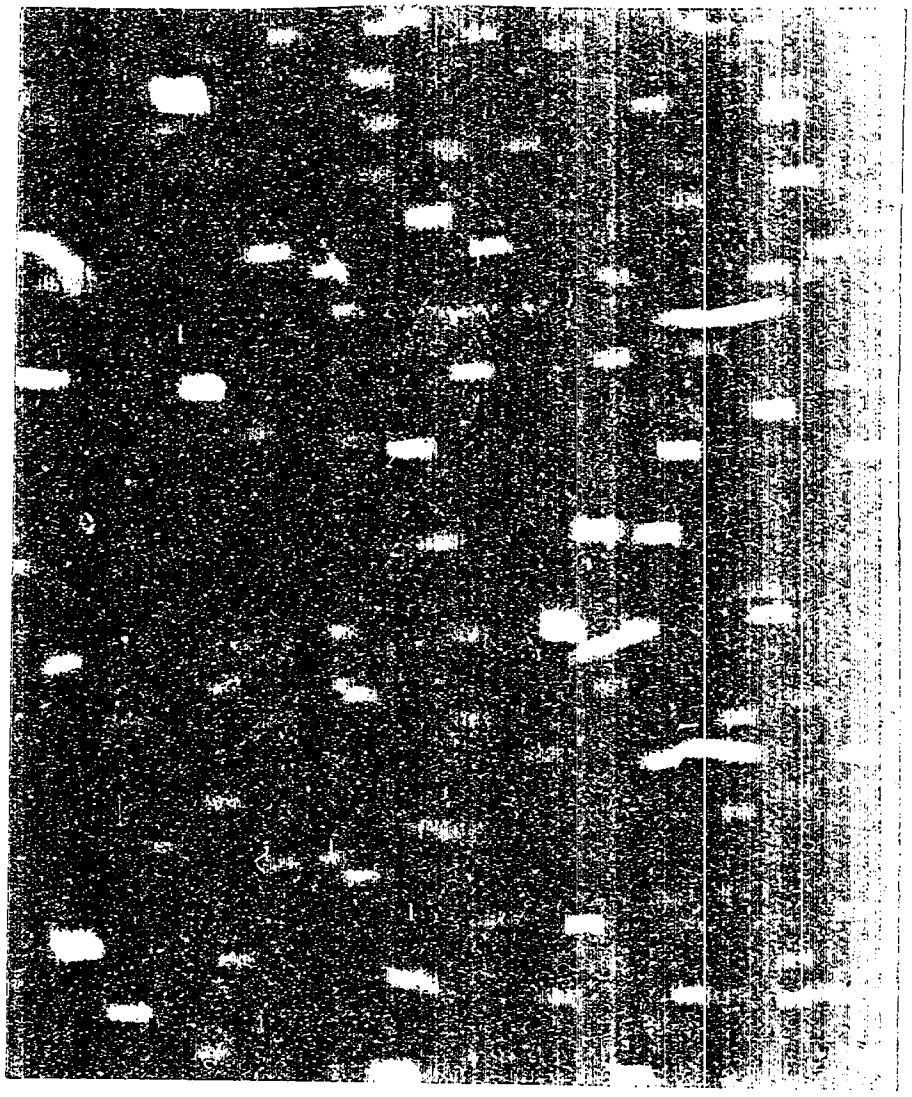


AA-CR-227-87-36. View from off starboard bow after Test A.

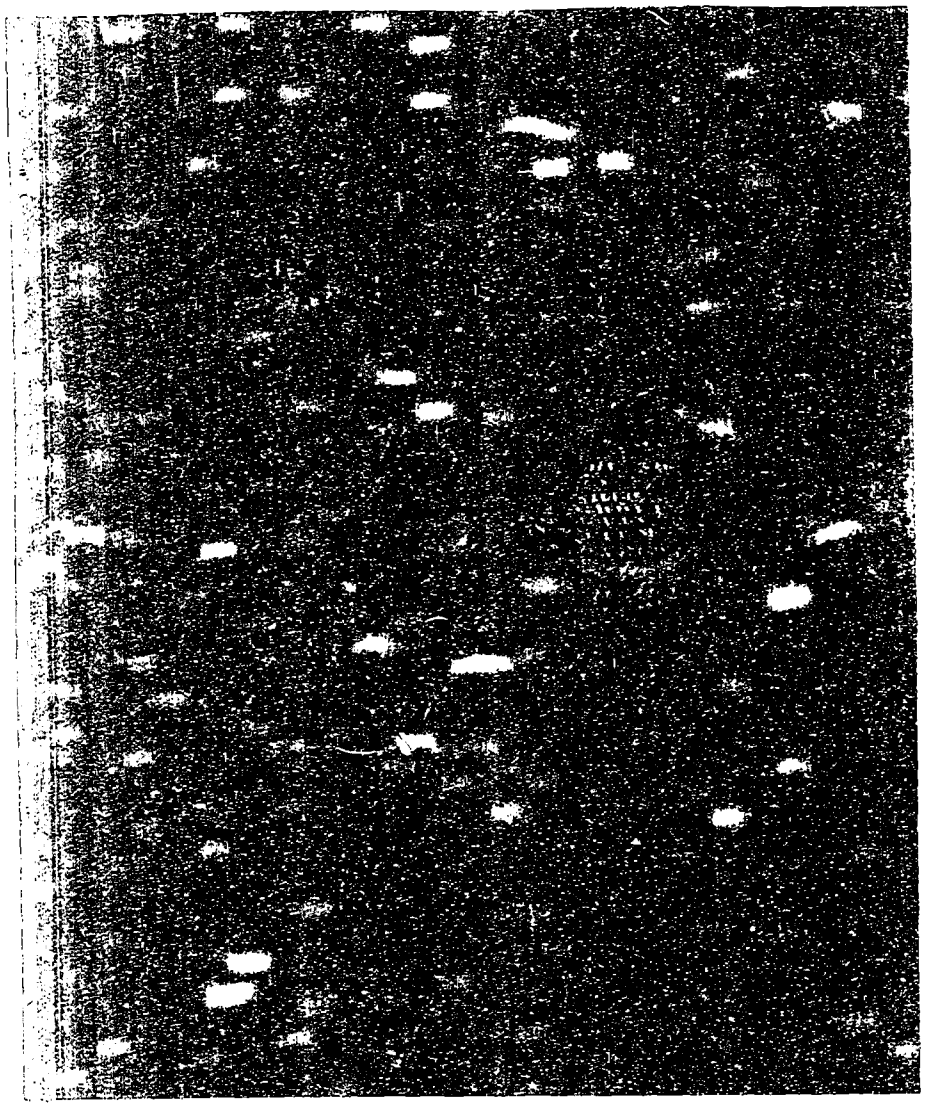


AA-CR-65-1733-5. Starboard side of after stack showing blast damage.

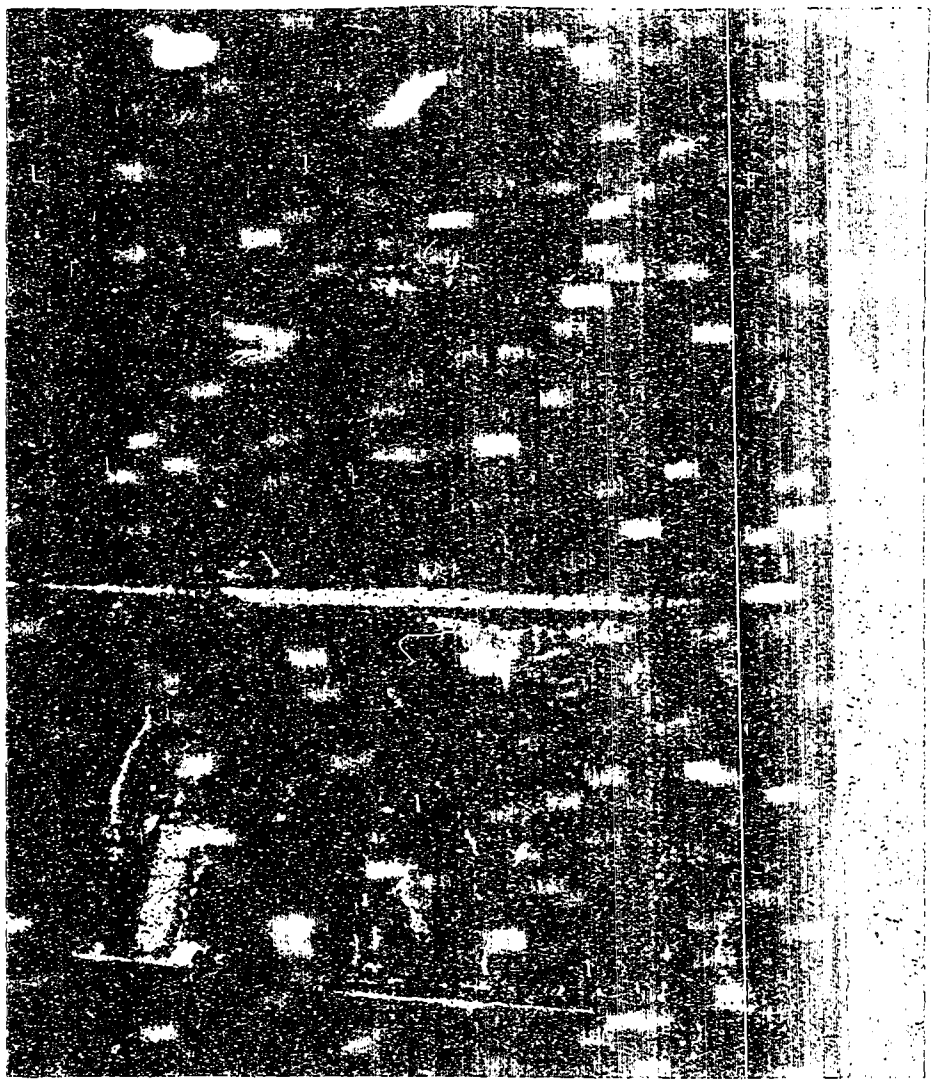
AA-CR-65-1733-4. Damage to signal shack on signal bridge.



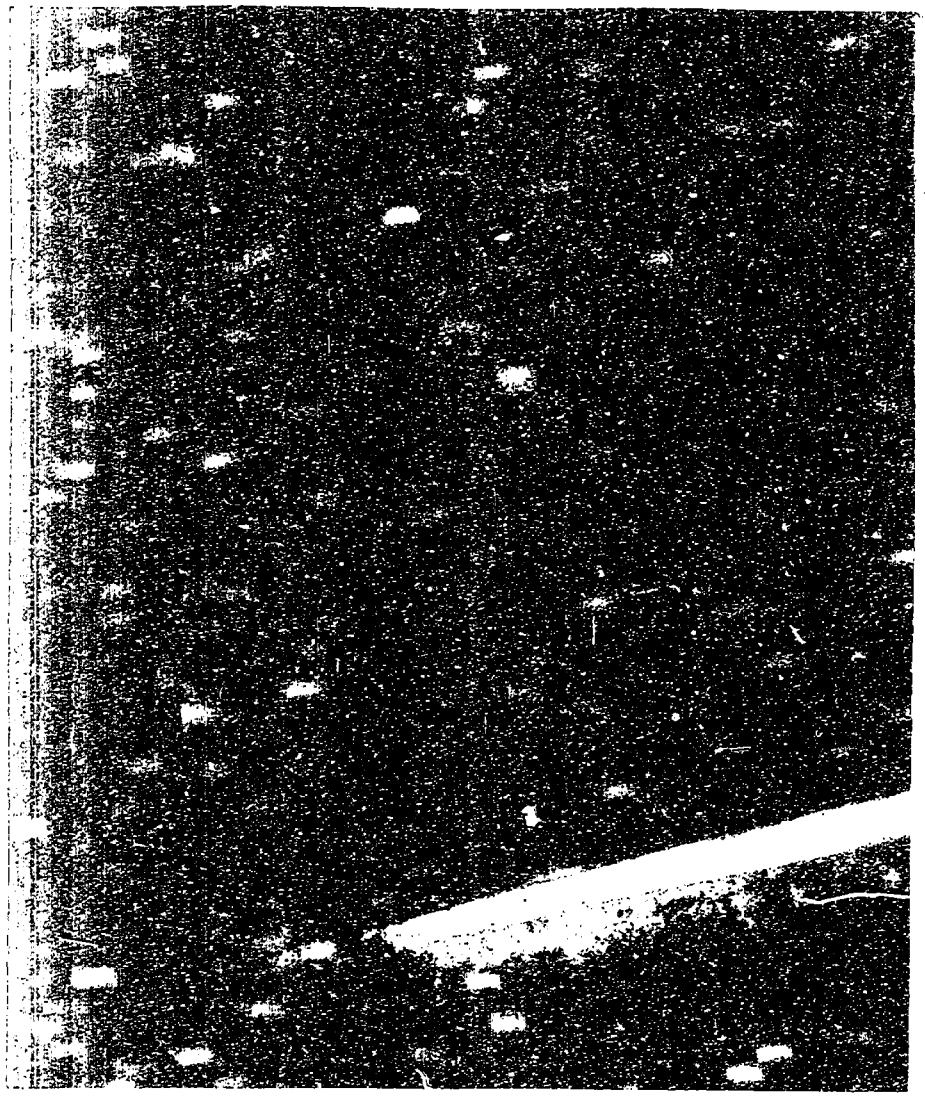
AA-CR-65-1733-1. Damage caused by fire in starboard flag bag.



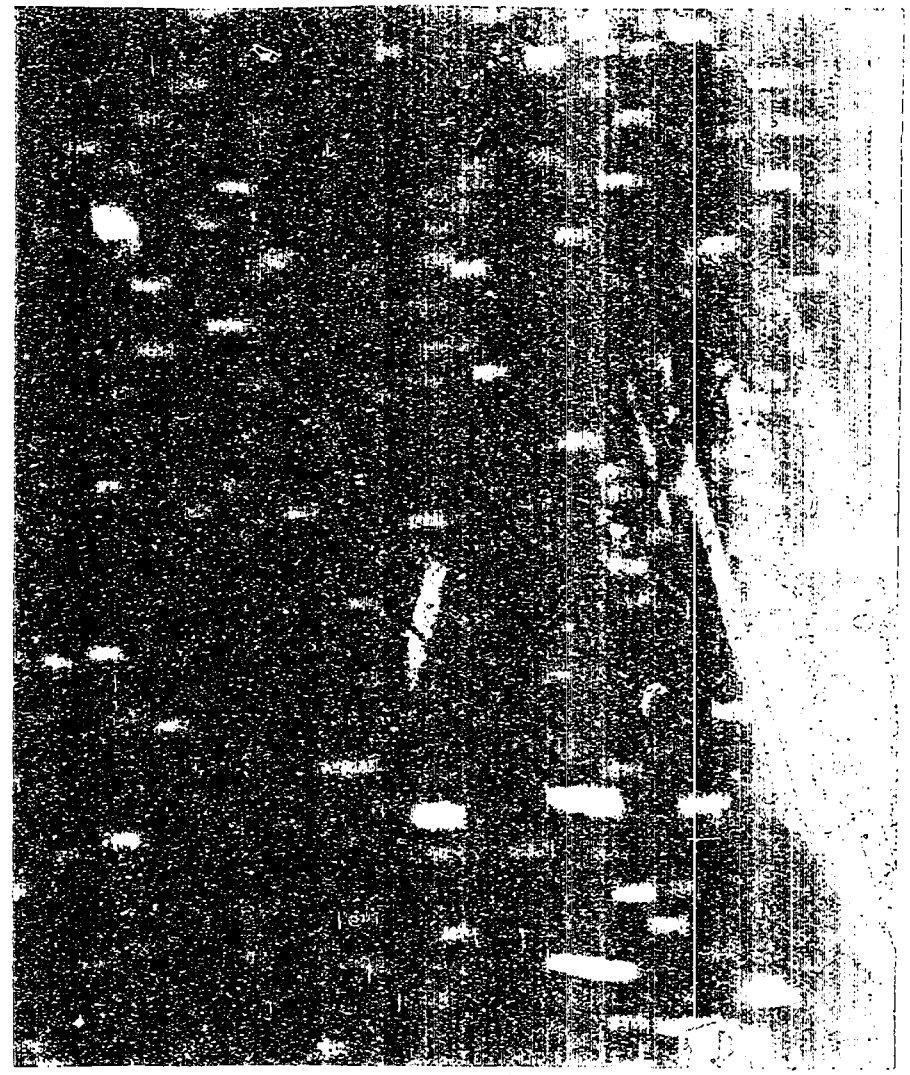
AA-CR-82-1829-11. Holes in pontoons of forward cargo hold.



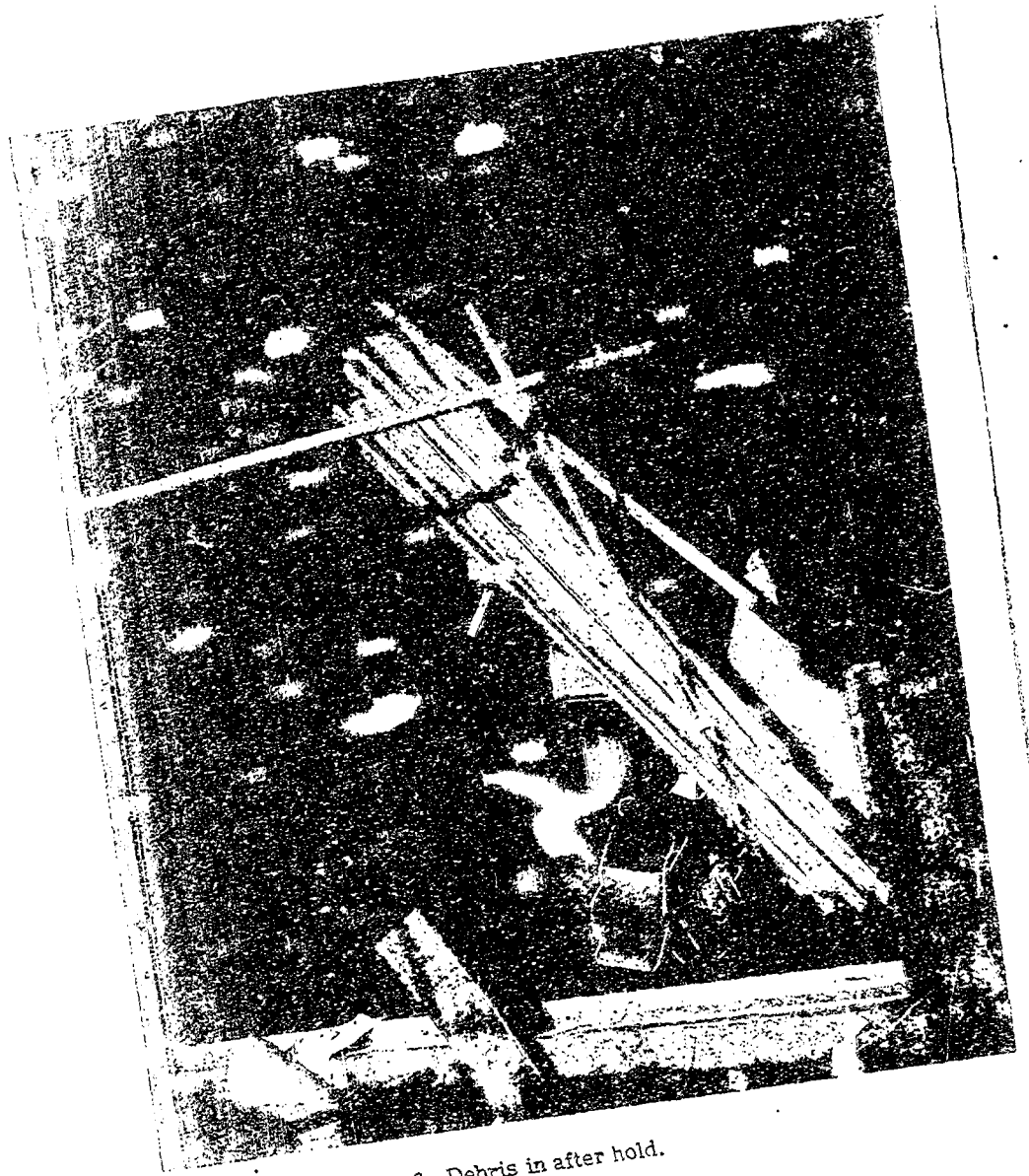
AA-CR-82-1830-1. Holes and dents in pontoons of after cargo hold.



AA-CR-79-1814-10. Damage to lockers in forward hold on main deck.

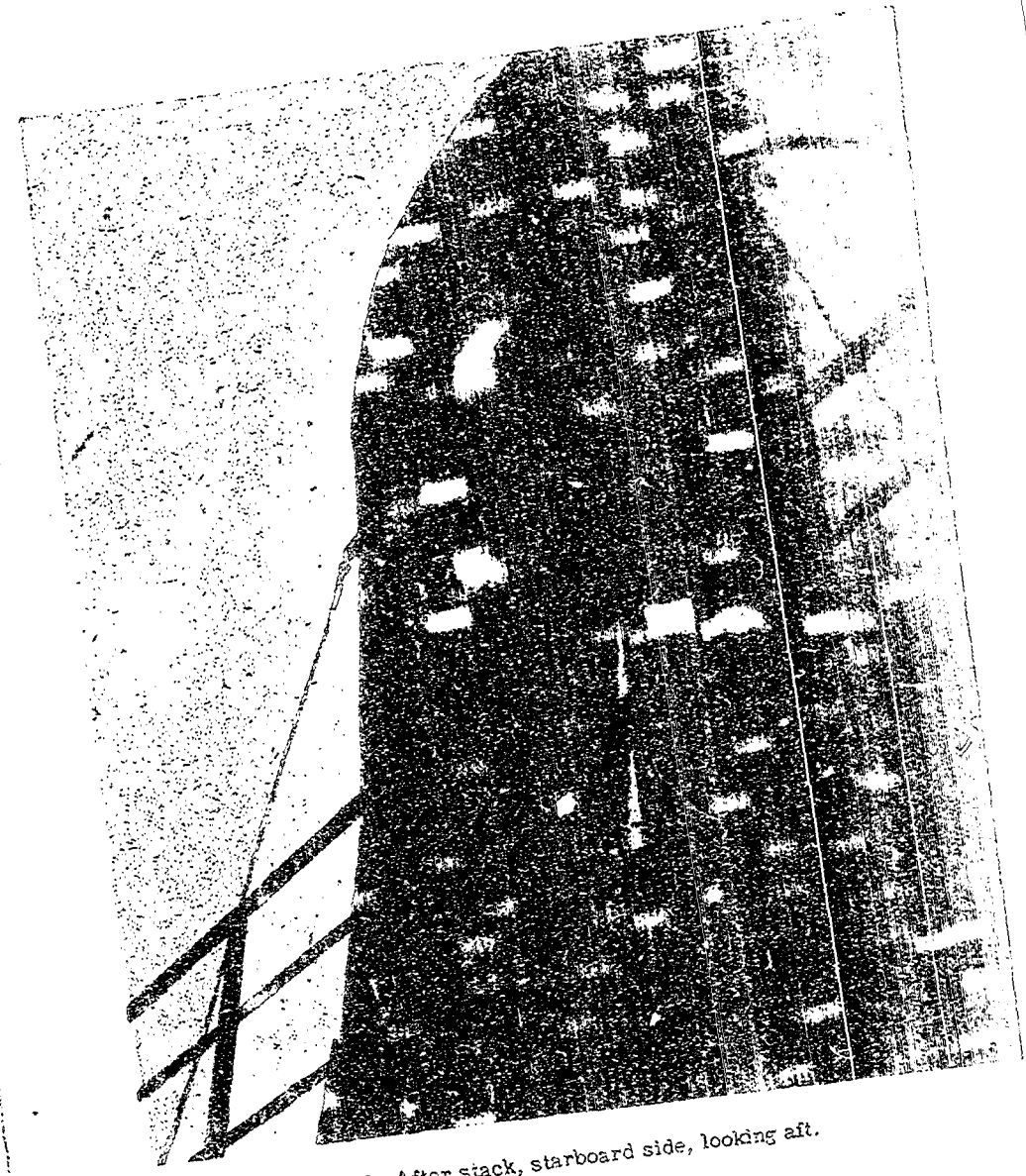


AA-CR-79-1814-11. Wreckage on main deck in forward hold.



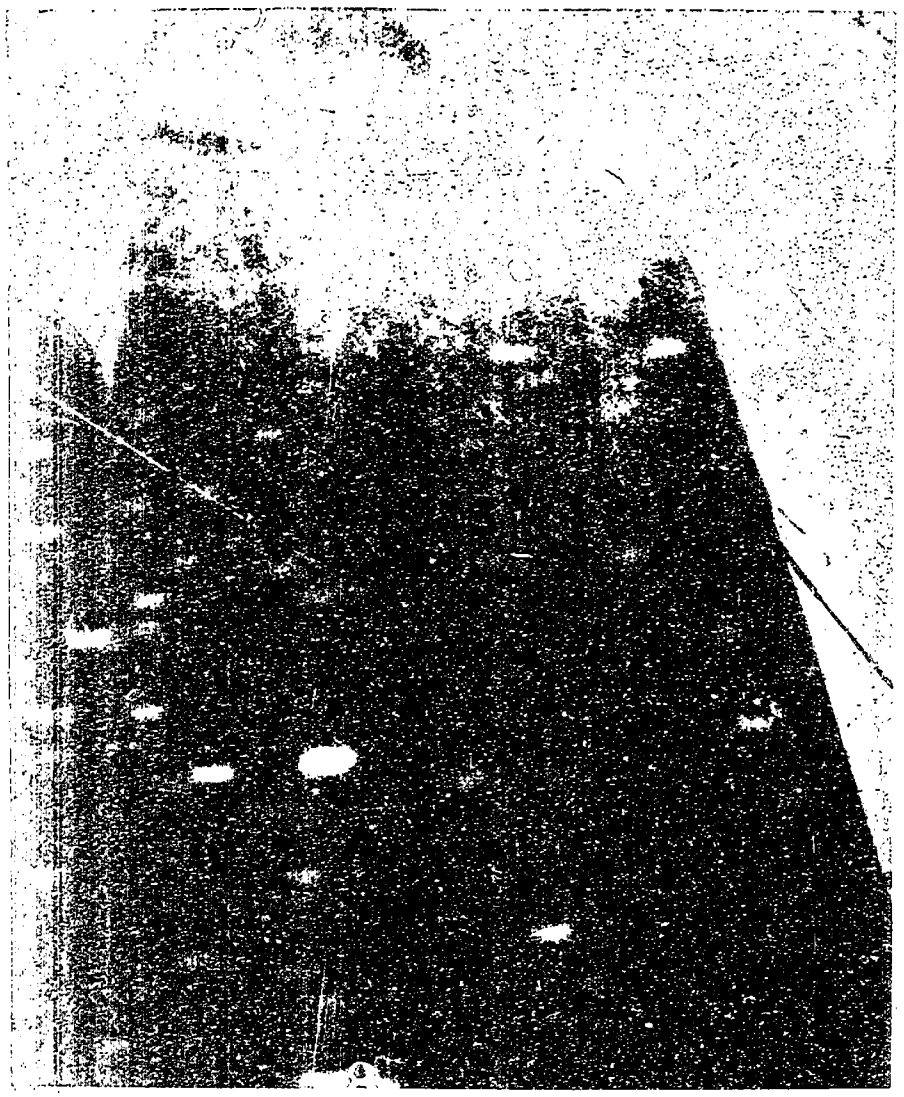
AA-CR-79-1814-6. Debris in after hold.

USS BANNER (APA60)
BASE



AA-CR-82-2169-7. After stack, starboard side, looking aft.

USS BANNER (APA60)
BOSB



AA-CR-62-2169-8. After stack, starboard side, looking forward.

AA-CR-62-2169-9. After stack, port side.

APPENDIX

SHIP MEASUREMENT DATA

TEST ABLE

2

DECK DEFLECTION GAGES

SHIP USS [illegible] (APA-00) TEST A

LOCATION			MAXIMUM	MAXIMUM	PERMANENT SET		REMARKS
FR. NO.	DECK	DIST. FROM ℄	COMP.	EXP.	DISTANCE	EXP./COMP.	
88	Main	Stbd.	0-0-2/16	0-0-9/16	0-0-1/4	Exp.	Due to local conditions
88	"	Port	None	None	None	None	None
110	"	Port	0-0-1/8	0-0-1/4	None	None	Due to local conditions
116	"	Stbd	0-0-1/8	0-0-5/8	None	None	Due to local conditions
129½	"	Port	None	None	None	None	None
129½	"	Stbd	0-0-3/16	None	None	None	None

APPENDIX

COMMANDING OFFICERS REPORT

TEST ABLE

SECTION I

PART A - GENERAL SUMMARY

1. Target Condition After Test.

(a) Draft after test - Forward: 8 feet 2 inches aft, 19 feet. List after test 2 degrees port. There was no flooding.

(b) Damage to superstructure was negligible, none to the hull. The bulkheads in the vicinity of the holds were dished slightly. The hatch boards and their supporting strongbacks covering [illegible] were knocked down into the holds. Some of the 1000 lb. pallets making up the first platform decks in the holds were picked up and dropped into the very bottoms of the holds. The stacks were dished slightly. The joiner bulkheads in the vicinity of the holds were distorted. A total of two weather tight and three watertight doors were dished in enough to make them ineffective. The bulkwarks at frame 83, port and starboard, on the superstructure deck were bent.

(c) There was very little damage to the [illegible], electrical, ship control, fire control, gunnery or electronics equipment.

(d) The starboard side, the stern, and most vertical surfaces exposed to the blast showed evidence of scorching. Only one fire was started - the starboard flag bag on the signal bridge - which did little damage. It is estimated that all personnel topside, in the after engine room and in the berthing compartments in the vicinity of the holds would have been killed or made ineffective by the sudden increase in pressure or blast.

2. Forces Evidenced and Effects Noted.

(a) The heat from the blast struck the ship from a relative bearing of about 150 degrees. The entire starboard side and the parts of the ship facing aft were scorched slightly, just enough to blister the first layer of paint. There was some evidence of heat on some manila lines in the most exposed parts of the ship and signal bridge halyards. The effects did not penetrate the hull nor bulkheads topside. There was nothing unusual in the behavior of structure or equipment.

(b) Only one fire was started and no explosions. The fire was started in the starboard [illegible] bag and alongside the Beach Master Announcing Transmitter ruining it and burned itself out without causing any further damage. Cause of ignition appeared to be falling halyards that were burning.

(c) The direction of the shock is presumed to have come from 180° rela[illegible]. The only evidence noted was the opening of locker doors and desk drawers in the vicinity of the holds. This effect was probably caused by the roll of the ship rather than by shock. About seventy light bulbs were broken in the ship, mostly in the topside compartments and along the starboard side aft above the main deck. Bulbs in shock mounts were undisturbed, the shock effect was much less than that [illegible] in a submarine after a moderate depth charge.

(d) The pressure wave hit the ship from about 180° relative; though there was slight evidence of it coming from a reverse direction. The ship rolled 25° to starboard and 19° to port. The areas affected were topside, the holds and vicinity. Most of the light sheet metal structures topside were bent and all the wooden frames in the centers of the life rafts were dislodged. All the halyards were [illegible] or burned off and pieces of the "YOKE" flag were found on deck. The instrumental mirrors were shattered. The weather tight and three watertight doors topside and aft and the stacks were dished slightly. The greatest damage was done to the holds and their immediate vicinity below decks. The hatch boards [illegible] x 8" x 7', covering the holds were bent downward [illegible] were folded as much as 90°), and knocked onto the first platform deck with such force that they tore several holes about [illegible] inches by [illegible] inches in fifteen pound plate. The large 1000 pound pontoons forming the first and second platform decks were lifted up and dropped down into the bottom of the holds. The large "T" beam type strongbacks supporting the hatch boards forming the cover of the hold were sheered off on one side and knocked into the bottom of the holds. Joiner doors of offices and staterooms in the vicinity of the holds were ripped off easily, shearing only the hinge screws. Light metal lockers and bulkheads in the area were ripped open or torn. The damage appeared normal considering the terrific blast pressure. Evidence of reverse pressure wave were the damage to the signalmen's shack on the signal bridge and the discovery of a metal shield of one tier of life rafts aft and above its or[illegible]al position. The pressure wave operated and the pressure release on one tier of life rafts on the starboard side at frame 88. The raft fell clear. The two bulwarks on either side of the ship at frame

58 on the superstructure deck were bent by the blast and several welds on strengthening frames cracked.

(e) The after starboard part of the ship and the exposed parts of the superstructure and masts were coated with a film of black greasy soot. An aluminum coffee pot about eighteen inches high and rather unstable was found still erect on a bench topside about fifteen feet from the plane on deck and the after hold and about five feet from a weather tight door that was dished in.

III. Results of Test on Target.

(a) No effect.

(b) No effect.

(c) Three watertight doors were dished in and rendered ineffective.

(d) All personnel in exposed parts of the ship, in the after engine room and in the vicinity of the holds would have been killed or incapacitated for duty. Men in the wardroom, officer's country, closed bridge, troop berthing spaces and forward engine room would probably have survived the blast. The pressure wave knocked out the thin joiner bulkhead separating the after hold from the entrance to the after engine room on the starboard side and entered that space. Only evidence of the effect of the blast in the engine room was the shattering of glass and liquid pressure measuring instrument suspended in that space. It is assumed that the blast would have knocked out or killed the personnel in the after engineroom. The galley was filled with soot but readily cleaned. The bunks knocked adrift next to the holds were useable. My conclusion is that the habitability of the ship was only slightly affected.

(e) The fighting efficiency of the ship would have been reduced only in porportion to the number of men rendered ineffective by the blast. Since all men topside would have had to have been replaced by less experienced personnel it is felt that the fighting efficiency of the ship would have been greatly reduced though the equipment was in no way damaged.

IV. General Summary of Observers' Impressions and Conclusions.

This ship is an attack transport with a primary mission of carrying troops and landing them at a designated spot. If the boats she carried were not damaged beyond repair facilities of the ship's force remaining effective, the ship could carry out its mission successfully. Damage to the holds and loss of after engine room force and personnel in the vicinity of the holds could have been avoided with improved construction of hatch covers over the holds and heavier metal protecting the entrance to the engine rooms. Except for the loss of personnel topside, the bomb, generally speaking, had little effect on the effectiveness of this ship.

7. Preliminary Recommendations.

The damage topside was superficial. Frame structures that must be exposed to similar blasts must be made of heavier metal and reinforced more strongly. The hatch boards covering the tops of the holds are too light and weak. They should be made much larger and stronger and firmly secured in place rather than just rested in their proper position. The large 1000 pound pontoons forming the first platform and second platform decks appear to be heavy and strong enough but they must also be firmly anchored in place. They were not forced down but lifted up and dropped. Living spaces adjoining the holds should be screened from the holds by heavy bulkheads and strong watertight doors. Openings to engineering spaces should be shielded by heavy flame proof doors. The holds should be closed off from the rest of the ship by heavy watertight doors.

SECTION I

PART C - INSPECTION REPORT

SECTION A - HULL

A. General Description of Hull Damage.

(a) Excellent.

(b) No hull damage.

(c) No comment.

(d) None.

(e) Conditions as they were before the blast.

B. Superstructure (exclusive of gun mounts).

(a) No damage to bridge area. Halyards on signal bridge were burned and broken, starboard flag bag burned out, and signalman's open deck house made of sheet metal badly bent but still usable. The two stacks were dished in slightly but nothing inside was damaged. Light metal structures bent and distorted.

(b) In all cases damage was caused by blast or pressure wave except in the case of the fire in the flag bag. This appeared to have been caused by falling halyards that were burning.

(c) None except for starboard flag bag on signal bridge and the beach master set next to it and probably some signal halyards.

(d) No comment.

(e) The use of light sheet metal anywhere in the superstructure should be discontinued for any blast will bend or rupture it making it unusable as well as a personnel hazard.

C. Turrets, Guns and Directors.

(a) Excellent, entirely operable. No comment.

(b) No comment.

(c) Operators flash shield distorted so as to prevent elevation stereoscopic rangefinder. Excellent.

(d) No comment.

D. Torpedo Mounts, Depth Charge Gear.

(a) None installed.

(b) None installed.

E. Weather Deck.

(a) The deck was intact. The only damage was to the covering over the two cargo holds. The tops of both holds were crushed in. The hatch boards 1' x 3" x 7' covering the holds were bent downward (some were folded as much as 90°) and knocked onto the first platform deck with such force that they tore several holes about 3" x 6" in fifteen pound plate. The large 1000 pound pontoons forming the first and second platform decks were lifted up and dropped down into the bottom of the holds. The large "I" beam type strongbacks supporting the hatch boards forming the cover of the holds were sheered off on one side and knocked into the bottom of the holds. The holds were also covered by three layers of canvas battened down. The holds were empty except for an aircraft in the bottom of No. 2 hold.

(b) The cover for the holds could not be repaired, but the large pontoons that made up the platform decks could be lifted back into place.

(c) No comment. The wooden frames forming the center of the life rafts were jarred a little out of place but did not impair the effectiveness of the rafts. The sheet metal guides for tiers of rafts were bent over the rafts and might interfere with their release. This could not be checked as this vessel carried only one raft in each tier. The pressure release on the raft starboard side at frame 88 was

operated by the pressure wave and the raft released. No comment.

F. Exterior Hull Above Waterline.

(a) Only scorched along starboard side by blast.

(b) No damage.

(c) No damage.

(d) None installed.

G. Interior Compartments Above Waterline.

(a) Only damage was in vicinity of holds. The blast dished the bulkheads of the holds outward slightly.

(b) Joiner bulkheads in the immediate vicinity of the holds were bent or damaged in varying amounts depending on their proximity to the holds. The bulkheads of offices, made of light metal, which formed a passageway with the heavy bulkhead of the holds were bulged outward slightly, that is, bulged towards the hold.

(c) One watertight door in the vicinity of the holds and two on the main deck were dished in slightly by the blast, still operable but no longer effective. Two weathertight doors in the superstructure were in the same condition. Several joiner doors were ripped out neatly and blown several feet down the passageways. These doors were all pulled out away from the compartments they closed as if sucked along by the blast. These doors were in good condition generally. Only the screws holding their hinges were pulled out or sheered off. Some doors in the same area were unaffected.

(d) In the holds, the living spaces adjoining actual holds were unprotected by any bulkheads. Here bunk frames were scattered about and their supporting stanchions bent. Lockers in this area were crushed or blown apart. In the other compartments protected by doors, only the doors or bulkheads were damaged. Rarely was any damage caused inside the compartments. The blast just ripped the doors out or bulged the bulkheads slightly.

(e) None.

(d) Only one cable had part of its insulation torn. The wire was tested and found to be safe and free of grounds.

(e) Damage to three watertight doors impaired the watertight integrity. All damage in living spaces could be quickly repaired.

K. Armor Deck: (Not fitted).

No comment.

L. Interior Compartments Below Waterline.

(a) No damage.

(b) No damage.

(c) No damage.

(d) Excellent and normal.

(e) None.

(f) None.

(g) None.

P. Underwater Hull.

(a) Conditions normal.

(b) None.

(c) No damage.

(d) None ascertained.

Q. Tactics.

(a) Conditions normal.

(b) None.

(c) None.

L. Flooding.

(a) None.

(b) None.

(c) None.

M. Ventilation.

(a) Emergency diesel exhaust duct cover dished in slightly on upper deck all the way aft closest to center of blast.

(b) A large amount of greasy soot was found in the galley which was similar to that found topside which apparently entered compartment via exhaust in No. 2 stack.

(c) None.

(d) Strengthen exposed ducts and duct covers by using heavier reinforced metal. Install closure in galley exhaust through No. 2 stack.

N. Ship Control.

(a) None to parts 1 through 5.

(c) None.

O. Fire Control.

(a) None.

(b) All stations are exposed on this ship. It is felt that the blast would have incapacitated all men at their stations topside thus leaving the ship unable to man its guns until the crews could be replaced.

(c) I consider the locations of the various stations satisfactory, but a blast proof cover, if practical should be installed to protect the operators.

O. Ammunition Behavior.

(a) Ready service ammunition lockers located throughout the ship in accordance with approved design. No damage to any ammunition though one five inch ready box, all the way aft on the upper deck, and its door dished in slightly. Exterior of lockers were scorched but no evidence of heat found inside.

(b) Magazines located below decks in accordance with approved design and undamaged.

(c) No comment.

(d) No comment.

Q. Ammunition Handling.

(a) Conditions normal.

(b) None.

(c) None.

P. Strength.

None.

S. Miscellaneous.

None.

SECTION I

PART C - INSPECTION REPORT

SECTION B - MACHINERY

A. General Description of Machinery Damage.

None.

B. Boilers.

No comment.

C. Blowers.

No comment.

D. Fuel Oil Equipment.

No comment.

E. Boiler Feedwater Equipment.

No comment.

F. Main Turbines.

No comment.

G. Reduction Gears.

No comment.

H. Shafting and Bearings

No comment.

L. Lubrication System.

No comment.

M. Condensers and Air Ejectors.

No comment.

N. Pumps.

No comment.

O. Auxiliary Generators (Turbine and Gears).

No comment.

P. Propellers.

No comment.

Q. Distilling Plant.

No comment.

R. Refrigerating Plant.

No comment.

S. Winches, Windlasses and Capstans.

No comment.

T. Steering Engine.

No comment.

U. Elevators, Ammunition Hoists, Etc.

No comment.

V. Ventilation (Machinery).

No comment.

T. Air Compressors.

No comment.

U. Diesels (Generators and Boats).

No comments.

V. Piping.

No comment.

W. Miscellaneous.

No comment.

SECTION I

PART C - INSPECTION REPORT

SECTION C - ELECTRICAL

A. General Description of Electrical Damage.

(a) Overall condition.

All the electrical equipment was in excellent shape showing no effects of the blast whatsoever. No comment.

B. Electric Propulsion Rotating Equipment.

No comment.

C. Electric Propulsion Control Equipment.

No comment.

D. Generators - Ship's Service.

No comment.

E. Generators - Emergency.

No comment.

F. Switchboards, Distribution and Transfer Panels.

No comment.

G. Wiring, Wiring Equipment and Wireways.

No comment.

H. Transformers.

No comment.

I. Submarine Propelling Batteries.

Not installed.

J. Portable Batteries.

No comment.

K. Motors, Motor Generator Sets, and Controllers.

No comment.

L. Lighting Equipment.

(a) - (e) No comment.

(f) About 70 light bulbs shattered, all in topside compartments.

M. Searchlights.

No comment. One port 12" light spacing and inoperative. One port 12" light broken and base fouled loose.

N. Degaussing Equipment.

No comment.

O. Gyro Compass Equipment.

No comment.

P. Sound Powered Telephones.

No comment.

Q. Ship's Service Telephones.

Not installed.

R. Announcing System.

No comment.

S. Telegraphs.

No comment.

T. Indicating Systems.

No comment.

U. I. C. and A. C. O. Switchboards.

No comment.

V. F. C. Switchboards.

No comment.

SECTION I

PART C - INSPECTION REPORT

SECTION D - ELECTRONICS

A. General Description of Electronics Damage.

(a) Excellent.

(b) None

(c) No comment.

(d) 1. Excellent.
2. Insulators on four antennaes shattered.
3. None installed.
4. None installed.
5. No comment.

B. Fire Control Radar.

No comment.

C. Surface Search Radar.

No comment.

D. Air Search Radar.

No comment.

E. Radar Repeaters.

No comment.

F. Radar Counter Measures Equipment.

No comment.

G. Radar and Radio Beacons.

No comment.

H. IFF Equipment.

No comment.

I. Communication Transmitters (Radio).

No comment.

J. Communication Receivers (Radio).

No comment.

K. Communication Antennae (Radio).

No comment.

L. Radio Transceivers.

No comment.

M. Sonar Echo Ranging and Listening Equipment.

No comment.

N. Sonar Echo Sounding Equipment and Altimeters.

No comment.

O. Loran Navigation Equipment.

No comment.

P. Power Supplies (Motor Generators and Filters).

No comment.

Q. Not applicable.

R. Test Equipment.

No comment.

S. Instrumentation.

No comment.

T. Telephone Equipment.

No comment.

U. Direction Finders (Radio).

No comment.

V. Spare Parts.

No comment.

CAUTION

This Document Contains
ATOMIC WEAPONS INFORMATION

NOTICE

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Defense Special Weapons Agency
6801 Telegraph Road
Alexandria, Virginia 22310-3398

TRC

9 April 1997

MEMORANDUM FOR DEFENSE TECHNICAL INFORMATION CENTER
ATTENTION: OMI/Mr. William Bush

SUBJECT: Declassification of Reports

The Defense Special Weapons Agency (formerly Defense Nuclear Agency) Security Office has reviewed and declassified the following reports: + ST-H

AD-366748	XRD-65
AD-366747	XRD-64
AD-366746	XRD-63
AD-376826	XRD-60
AD-376824	XRD-58
AD-376825	XRD-59
AD-376823	XRD-57
AD-376822	XRD-56
AD-376821	XRD-55
AD-366743	XRD-54
AD-376820	XRD-53
AD-366742	XRD-52
AD-366741	XRD-51
AD-366740	XRD-50-Volume-2
AD-366739	XRD-49-Volume-1
AD-366738	XRD-48
AD-366737	XRD-47

TRC 9 April 1997

SUBJECT: Declassification of Reports

AD-366736	XRD-46
AD-366735	XRD-45
AD-366723	XRD-37
AD-366721	XRD-35
AD-366717	XRD-31-Volume-2
AD-366716	XRD-30-Volume-1
AD-366751	XRD-68-Volume-2
AD-366750	XRD-67-Volume-1
AD-366752	XRD-69
AD-366744	XRD-61.

All of the cited reports are now **approved for public release. Distribution statement "A"** now applies.

Ardith Jarrett

ARDITH JARRETT
Chief, Technical Resource Center

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